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AGRICULTURAL RESEARCH ADMINISTRATION
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

Project | Date | Author

SUBJECT—

TITLE

THE USE OF HORSES FOR SCOUTING ENGELMANN SPRUCE BEETLE INFESTATIONS

By

George Sherrick

Forest Insect Laboratory
Fort Collins, Colorado
February 12, 1952

INDEX NO.—

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Fort Collins, Colorado
February 14, 1952

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To: J. A. Beal, In Charge, Forest Insect Investigations

From: Noel D. Wygant, Entomologist in Charge, By: B. H. Wilford, Entomologist

Subject: Engelmann Spruce Beetle Survey, Detailed Report, 1951

Enclosed are six copies of W. F. McCambridge's December 7 report on the 1951 Engelmann spruce beetle survey on the Routt, Arapaho, and White River National Forests, Colorado. This report is more detailed than that prepared on November 20 and is proposed primarily for use as a work report for those concerned directly with the control program this year.

We believe you will find the report clear and to the point. It explains briefly the reasons why the areas of artificial control varied between 1950 and 1951. Especially, it delineates the present epidemic areas, tabulates the size of the infestation in terms of numbers of trees, and explains the potentialities of the areas in light of continuation and expansion of the outbreak.

You realize, of course, and we appreciate what the results of the survey signify---a lot of hard and intensive field work by good men, those L/A employees who stuck by us during a hectic period of hirings and lay-offs and the Bureau men detailed from the Division's field laboratories and from Blister Rust. Much of the credit, too, for a job well carried out must go to McCambridge, Knight, and Hutchison. Their plans, the training they gave, and their general leadership resulted in an excellent survey.

One of the enclosed copies of the report is for the Chief of our Bureau, one for the Chief of the Forest Service, and one for the Chief Forester, National Park Service. The other three you may wish to keep at the Division office. We are sending copies to each of the Division's field laboratories, one each to the three Forests concerned, several, as required, to the Denver office of the Forest Service and the spruce beetle control project office, and one to Ernie Kolbe. If you desire more copies, please let us know.

B. H. Wygant

cc: Brown, Eaton, Evenden ✓, Furniss, Keen, Kowal, Orr, Whitten, Yuill, Speers

Cibs n. 2-18
Johnson 2/19
Torrell 2/18
Trostle 2-18
Denton
Evenden

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Fort Collins, Colorado
February 12, 1952

To: J. A. Beal, In Charge, Forest Insect Investigations

From: Noel D. Wygant, Entomologist in Charge, By: B. H. Wilford, Entomologist

Subject: "The Use of Horses for Scouting Engelmann Spruce Beetle Infestations" by George Sherrick

Part of our spruce beetle scouting program this past summer was done by a two-man crew on horseback. The decision to use this crew grew out of our appreciation of the amount and kind of country to be covered and the abilities of the men selected for the job. The enclosed report by one of the crew members summarizes the requirements that tend to make such a crew successful. While not initiated solely as such, however, this scouting crew on horseback was part of the study aimed at improving surveys. It served both purposes, it brought back the scouting data and it proved horses can be used to distinct advantage in scouting work.

McCambridge was primarily instrumental in getting this horseback crew in operation. He supervised the assembly of the crew and equipment and outlined the crew's job. Frank Hutchison was chief of party.

McCambridge comments on the report as follows:

> "This report by Two-Gun Sherrick seems to cover the main aspects of this subject. The report was not intended to be a complete treatis from organization and training to the completed scouting report, but rather to compare riding crews to walking crews and give us the impressions of the riders.
>
> "We should keep in mind that Hutchison and Sherrick were both outstanding men for this type of work. However, the nature of the job calls for men of high calibre and we must try to secure such men in the future, or continue with the walking crews. I feel satisfied that Hutch and Two-Gun were able to locate infested trees from horseback. I am further convinced that they

Ellis n. 2-19
Johnson 2/19
Terrell 2/18
Trostle 2-19
Denton 2/20
Evenden
} scouting? why not reconnaissance survey?

conducted an efficient, safe summer work program. I hope any riders we might employ in the future will maintain the same safety record on this job of relatively high risk."

We plan to use similar crews for this year's program and can visualize the practicability of using horseback crews for other scouting and survey work.

B. H. Wygant

cc: Evenden ✓
Furniss
Keen
Orr
Eastern Laboratories
Sherrick
Hutchison

UNITED STATES DEPARTMENT OF AGRICULTURE
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THE USE OF HORSES FOR SCOUTING ENGELMANN SPRUCE BEETLE INFESTATIONS

INTRODUCTION

Late in the summer of 1951 a two-man scouting crew was sent into the spruce forests on the Arapaho and Routt National Forests. This crew, equipped with horses, was given a two-fold mission: (1) to collect data as to the extent and intensity of spruce beetle attacks, and (2) to obtain information on the cost of such an operation in comparison to the standard three-man scouting crew working without horses. The two-man pack outfit proved successful, despite the many problems that are attendant upon any new undertaking.

COST AND PRODUCTION COMPARISON

Based on the cost and production records of the 1951 field season, it was found that a two-man horseback crew covered an average of 220 miles per week (six work days) at the cost of $1.10 per mile, while a three-man walking crew covered an average of 165.6 miles per week at the cost of $1.56 per mile. This shows a saving of $101.20 on 220 miles covered. A total saving in an 8-week period of $129.28, and a net gain of 435.2 miles.

Cost: Two-man horseback crew		Cost: Three-man walking crew	
Two G.S. 5's	$11.92	One G.S. 5	$11.92
	11.92	Two G.S. 4's	11.04
			11.04
Per diem	2.60	Per diem	2.60
	2.60		2.60
Three horses @ $3.00 per day	9.00		2.60
Total cost per work day	$38.04		$41.80
Week end cost:		Week end cost:	
Per diem	2.60		
	2.60		
Horse rental	9.00	Per diem	7.80
	$14.20		
Total per 7-day week	$242.44	Total per 7-day week	$258.60

Note: The above listed cost does not include cost of transporting horses from one area to another or cost of transporting walking crews. The walking crews, out of necessity, use a jeep daily, while the horseback crews use a vehicle only when making a major move.

AREA CLASSIFICATIONS FOR THE USE OF HORSES

The purposes of scouting from horseback are to cover areas inaccessible to walking crews and to cover those extensive areas which are accessible but in which there is reason to believe no serious epidemics exist. By using horses the crews are not limited to areas within walking distance of roads, and furthermore, they may move camp as they work deeper into remote regions. This eliminates dead-heading many miles in and out of areas, thereby saving both time and money. Areas to be worked from horseback fall into two general classifications:

Class I

Areas inaccessible to walking crews.

(a) Large areas without roads.
(b) Areas where the spruce type is 5 to 7 miles from the nearest road.

Class II

Areas remote.

(a) Areas requiring excessive vehicle travel from nearest camp site.
(b) Areas requiring overnight walking trips from the nearest possible base camp.
(c) Areas requiring long daily walks to and from the spruce type, but shorter than I (b) above.

The walking crews are limited to spruce stands accessible to a jeep and trailer. Accessibility also limits the area to be worked from a single camp. If a walking crew requires greater travel time than productive time per day, the area should be worked with horses. The horseback crews are able to ride and walk entirely through an area, scouting all the time, whereas the walking crews must approach some areas from different sides before they are completed.

SAFETY

Transportation of horses

When transporting horses from one place to another, never sacrifice safety for the sake of speed. Load the horses with as little excitement as possible. The trailer or truck should be backed into a ditch or low spot so that the end-gate will be as level and as near the ground as possible. This permits a horse to enter with little effort and lessens the possibility of a fall. Once loaded, the horse must be tied securely allowing enough slack so that the horse can hold its head in a normal position. The halter rope should be tied with a slip knot for ease of release in case of an emergency. If a horse trailer is used, the trailer hitch and safety chain must be checked often. The standard ball hitch tends to become loose in time and should be checked before each move.

When towing or hauling horses, it is well to remember that the vehicle is far heavier than when empty; therefore, a greater distance is required within which to stop it. To prevent horses from losing their balance, change gears gradually and make all turns smoothly. When a horse makes a lunge to regain its balance, the vehicle may be thrown out of control. Avoid parking on side hills or steep grades. A horse that is handled with care and consideration will usually enjoy riding and cause little or no trouble.

Horses in the field

Observation of a few simple rules which should be second nature to any horseman will keep accidents to a minimum. When approaching a horse, whether from front or rear, always speak to it. If the horse is aware of your presence, it is less likely to lunge or kick. Gentle handling means gentle horses. Keep saddle girths tight. Most horses instinctively swell up when first cinched. It is good practice to dismount after riding a short distance and tighten the cinch. A loose saddle is a hazard in any type of country.

When riding through rough country, let the horse pick its way. Keep the reins loose enough so that the horse has a fair amount of freedom. A tight rein in a tight situation may result in a bad fall.

From time to time it will be necessary to lead a horse on foot, especially up steep grades, through down timber, and across ditches. Utmost care should be taken to stay out of the direct path of the horse. When climbing, a horse will not stop until it is reasonably sure of its footing. This is especially true of a pack horse carrying a load. There is also a tendency for the horse to speed up when in a "tight" situation. The man should walk well out of the horse's path. When leading a horse across a down timber or a ditch, stand aside as the horse may decide to jump.

Travelling after dark on unknown trails is out of the question--even on well-known trails it is not a safe practice. Each day's ride should be planned to insure returning to camp before dark.

Most riding will be done in a walk. There will seldom, if ever, be a need to run a horse. In skirting through open country, it may be desirable to slow-lope, provided the country is fairly level and the ground firm. When packing, travel must be at a walk. The pack horse should never be tied hard and fast, but led with a loose rope allowing enough slack so that it may pick its way.

When riding through heavy timber the rider should allow himself and the horse ample room to clear tree trunks--a man's legs can be crushed between the horse and a tree.

Possibly one of the most common hazards in the handling of horses is that of being stepped on. When working around a horse, avoid placing your feet too close to the animal's hoofs, for a man with a crushed foot is of little or no value on a scouting crew.

Picketing the horse

When picketing the horse, take care to select a place free of any stumps and logs on which the picket rope might become tangled.

Lightning

Sudden storms in the mountains are often accompanied by lightning. A man on horseback makes an excellent target for lightning. Stay away from tall spruce or rocky points above timber since both are dangerous in lightning storms. Seek shelter in an aspen grove--it's safer.

Safety, in general, is covered in detail by the Survey Manual for Engelmann Spruce Beetle.

FIELD PROGRAM

Work Schedule

It is well to plan the work schedule so that the horses will not be pulled out of the area before the job is completed. For example, if the area to be covered requires 10 to 12 working days, the crew should remain in the field until the job is completed. If taking days off will call for a long move out of an area not yet covered, the loss of time would be prohibitive. This may be overcome by good planning. For the most part, it is more satisfactory for horseback crews to work a straight 12 days when a 48-hour week is in force, taking 2 days off and returning to work with supplies for another 12-day work session. This is especially advantageous in wilderness areas where much time must be spent getting into the areas to be worked.

The Forest Service has Guard Stations throughout the areas to be scouted. These stations are usually equipped with a small barn, corral, and pasture. When planning work schedules, the crew should note Guard Station locations in relation to the area. It will often be convenient to work in the general direction of a Guard Station, provided, of course, a reasonable amount of type will be covered. In most cases the work can be planned so that the horses can be moved to a Guard Station upon completion of an area. If this should fall on the 11th day, the 12th day may be used to move horses and gear to the next starting point. If, on the other hand, a part of the 12th day is needed to complete an area, the horses may be pastured at the Guard Station and moved the following work day. It will be noted that a minimum loss of time is involved when the crew moves at the end or beginning of a work period.

Equipment

Weight is the foremost consideration in making up a pack outfit. No horse can carry more than 200 pounds of gear and remain in good condition over a long period of time. It is imperative that the horseback crews carry only essential equipment. Adequate equipment for two men will weigh approximately 100 pounds, including two sleeping bags. This allows 100 pounds for provisions and personal gear. Some items such as maps and photos may be carried in saddle bags. However, it is well to remember that overloaded saddle bags may be injurious to the horse's kidneys. Proper organization of equipment when packing will make moving a simple routine.

In the choice of saddles, weight is again an important factor. The western stock saddle is suitable provided it is not too heavy. Much can be said in favor of the McClellan saddle. Many mountaineers prefer it,

for it is light and sturdy, easy on the horse, and can, in emergency, be used for packing as well as riding. For this packing operation the standard "Saw Buck" pack saddle is recommended. Open-top panniers are satisfactory, since the pack will usually be covered by a manta.

The following list includes the items essential for a two-man pack outfit.

1	jeep or ton and one-half truck
1	one-horse trailer (if jeep is used)
2	saddle horses
1	pack horse
2	saddles, stock or McClellan
2	pair saddle bags
2	bridles
1	pair of panniers, open-top
1	lash rope 5/8" x 60'
1	lash cinch
3	pair of hobbles
3	halters
3	picket ropes 5/8" x 35'
1	curry comb
1	brush
1	bottle linament
1	can salve
1	bell and strap
3	saddle-pads or blankets
1	manta 7' x 7'
1	silkoline tent 8' x 8'
2	air mattresses
2	kapock pads
1	two-man mess kit
1	Coleman stove (two-burner)
1	Coleman lantern
1	shovel (folding handle)
1	db. axe (2 lbs.)
2	1 gal. cans for white gas
2	canteens
2	tatum holders (large)
2	hand compasses
1	first-aid kit
1	pair of pliers
1	funnel No. 0
1	file
1	dishpan, large
1	flashlight
2	masonite sheets 18" x 24"
	Aerial photographs
	2 inches equal 1 mile timber type maps
	stereoscopes, pocket
	pencils

tracing paper
tally sheets
grease pencils
protractors
rules, 6"
carbon paper
red pencils
scotch tape
1 packet automotive accident forms
1 packet personal injury forms
1 packet expense account forms and time sheets
1 packet property forms and termination forms
large brown envelopes
small envelopes

Equipment must be kept in good repair. Since equipment is limited to essentials, the loss of a single item will leave the crew ill-equipped. Each man should assume equal responsibility for the care of gear.

Qualifications of horses

The success of a pack outfit must necessarily depend upon the careful selection of animals. The pack animal should weigh from 1,100 to 1,200 pounds and stand from 12 to 14.2 hands high. A wide back, stocky build, and sound wind are essential, but good and well-shod feet and a calm, even disposition are perhaps the two most important considerations in choosing the pack animals. Although a horse meeting these specifications can be trained to pack in a comparatively short time, an experienced pack horse will save the crew members' time and tempers, not to mention valuable equipment.

Saddle animals should be chosen as carefully and judiciously as the pack horses. The riding horse may be somewhat lighter and smaller than the pack animal, but he should be equally sound of wind and equally calm in temperament, since an excitable horse is a genuine hazard. Again, good, well-shod feet are vital. Use local animals accustomed to working in high altitudes.

Qualifications of men

No less vital than the animals to the successful pack crew are the men chosen for horseback scouting. Good horsemanship and a genuine affection for animals are prerequisites. One member of the team should have previous packing experience, or at least some training and practice in the art of packing. This skill is not of the type to be acquired by trial and error. Faulty packing may cost the crew expensive equipment as well as permanently damaged pack animals. However, horsemanship

alone cannot qualify a man for scout work in wilderness areas. Since horses are a means of transportation, qualification in horsemanship should be considered the equivalent of a driver's license.

In selecting men for a horseback scouting team, one must bear in mind that success of the operation will depend upon their skill as woodsmen. Ideally, the men should be familiar with the type of terrain to be scouted. They must be familiar with the use of the compass and be capable of reading maps and aerial photos. The ability to construct good camps should not be overlooked, for the comfort and contentment of all crews are largely dependent upon a good camp. Good camp construction reflects a man's background as a woodsman. Good food and good cooking are essential.

It is equally important that the men have a sound knowledge of the timber type and the various stages of development of the Engelmann spruce beetle. For the actual job in the field requires that the men have the ability to spot infested trees quickly, determine the status of the insect, make approximate estimate of the acreage infested, and give a detailed description of the infested areas. A scout's value is measured by his ability to see and report.

RECOMMENDATIONS

A jeep and horse trailer are not entirely satisfactory as at least two trips are required to transport three horses and the equipment from one area to another. A 1½-ton stake truck is more practical and safer. With a stake truck the horses and equipment can be moved in a single trip and the hazard of a horse trailer eliminated.

It may be well to consider that the horse rental cost could be cut by the purchase of horses. When horses are to be used for a period of 60 days, rental on 15 head amounts to $2,700.00 at the local rate of $3.00 per day, tack included.

Horses may be purchased on the local market for from $80.00 to $100.00 per head. Assuming $100.00 are paid, 15 would cost $1,500.00. This, of course, would call for the purchase of tack; even so, a saving is shown:

15 head of horses @ $100	$1,500.00
10 saddles (McClellan, blankets and bridles)	200.00
5 pack saddles and panniers	235.00
15 horse shoeings @ $6.00 per head	90.00
10 saddle bags	80.00
Miscellaneous, as cinches, mantas, halters, rope, bells, blankets, straps	100.00
	$2205.00

This data is based on maximum local prices.

Horse rental	$2,700.00
Horse purchase	2,205.00
	$ 495.00 saving

Even allowing for salary of the man who does the buying, a saving of more than $400 is shown. At the end of the field season the horses may be sold for at least 3/4 to 2/3 the original purchase price, thereby saving approximately $1,300.00.

Training Period: During the training period men should be instructed in scouting procedure and techniques, use of the compass, map and photograph reading and orientation, and special problems in horsemanship. At this time the scouts may be observed and evaluated as to ability in care and use of animals, packing, care of equipment, camp construction, ability to plan, follow instructions, exert initiative, and work. Personnel adjustments may be made and crews organized.

Planning: When crews are organized, areas should be assigned so that the chief of party with the aid of the scouting leader may set up a work

plan. The work plan should include the starting point, possible camp sites, trails to be travelled by the packer, forest type to be worked enroute, type to be covered by the crew member not packing, a detailed itinerary, and finish point. If the trip requires more provisions than can be packed in with the equipment, a "cache" should be planned. This cache should be located at or near some known land mark such as a Guard Station, cow camp, or Forest Service fire fighting tool box. The location should be as convenient as possible to the area at the time the provisions will be needed. The provisions should be placed in a box or can to protect them from weather and rodents. The field clerk may make the cache at a time agreed upon with the crew, or the crew may make the cache before entering the area. Good planning in advance will save time in the field.

Scouting: The general pattern for scouting is set by the nature of the spruce beetle attack. Since infestations generally occur in creek bottoms and in the better spruce stands on benches and high ridges, the areas should be scouted in the same order. Usually the crews should camp near the top of ridges and work the drop-offs on either side. In creek bottoms various obstacles may be met, such as, beaver dams, bogs, steep rugged terrain, and down timber. To keep such obstacles to a minimum, Forest Service and sheep herder trails may be used to good advantage. If no man-made trails exist, cattle or game trails can be used. The scout must remember that all infestations are not along trails and his course of travel should keep him within spruce type, if possible. When scouting timber on benches and high ridges, travelling in a zig-zag pattern slightly across the contours will give good coverage. Occasionally some small tributaries and rough terrain must be "walked out." In such a case, the horse should be picketed, preferably, and if possible, in a small park. On slopes too steep for safe riding, the scout should dismount and lead the horse. The packer should work areas enroute to new camp sites. If the new camp site is reached early in the day, a nearby area should be scouted, after the pack horse is unloaded and picketed. The exact location of the new camp must be agreed upon by crew members before moving.

Reports: The scout must be thorough, leaving nothing to chance. Complete coverage and careful observation are essential. Reports should be complete in every detail including a detailed description of infested areas, possible survey camp sites (water), access routes to the areas, and suggested procedures for surveying each area.

Submitted by,

George W. Sherrick

George Sherrick
Supervisory Control Aid
December 27, 1951

cc: Evenden
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Orr
Eastern Laboratories
Sherrick
Hutchison